

REMARKS/ARGUMENTS

By this Response, no claims are amended. Claims 19-26 and 28-37 are pending.

Favorable reconsideration is respectfully requested in view of the following remarks.

Applicant respectfully disagrees with the Examiner's rejection of the pending claims in view of "Continuous Mesoporous Silica Films with Highly Ordered Large Pore Structures", Zhao, et. al., Adv. Mater. (1998), 10, No. 16, pp. 1380-1385 (hereinafter "Zhao").

Claims 19-24, 26, 28-33, 35 and 37 are all directed to a ceramic film, which:

"does **not** include pores sufficiently ordered in a plane of the substrate such that an X-ray diffraction pattern of said film shows a diffraction peak (underlining added)."

Zhao is replete with descriptions of the materials that it synthesized being "highly ordered", as indicated by "XRD pattern", which is X-ray diffraction patterning. X-rays generate a diffraction patterns when they impact ordered or crystalline materials where the ordering allows for consistent deflection of the X-rays sufficient to generate a detectable deflection pattern. Non-ordered materials do not generate such diffraction patterns when subjected to X-rays. Zhao's recitation to "cubic", "hexagonal" and images shown in Fig 1 of Zhao, all show Zhao is describing only "ordered" materials that have crystalline properties, where the crystalline structure is either "cubic" or "hexagonal". This is entirely inconsistent with Claims 19-24, 26, 28-33, 35 and 37. Zhao has no suggestion that anything other than "highly ordered" materials are desirable and exhaustively teaches away from the materials of Claims 19-24, 26, 28-33, 35 and 37 that claim films that are not ordered.

The pending claims further recite:

“a metal content of less than 500 ppm.”

Zhao is silent as to metal content. Zhao apparently uses surfactants from commercial surfactant vendor BASF, such as Pluronic P103, Pluronic P65, Pluronic P85, Pluronic F127 and Pluronic L65. Such surfactants are typically synthesized with a final neutralization step performed with metal-containing bases, resulting in significant metal loadings of the surfactants. Thus, absent any explicit teaching to the contrary, when Zhao uses commercially available BASF Pluronic surfactants, Zhao creates materials having metal contents above the present invention's claim limitation to “a metal content of less than 500 ppm.”

Metal content is a significant issue for materials going into electronic materials of construction. The electrical properties of electronic materials of construction are extremely important to the companies fabricating integrated circuits. High metal contents in such electronic materials of construction alter electrical properties of those materials, making such materials and their precursors unacceptable to the electronics fabrication industry.

In the present invention, the surfactant is either further purified after receipt from the surfactant supplier or Surfynol surfactants are used, which have much lower metal contents. This is substantiated in Example 35 and Table 14 of the present invention's Specification at page 32.

The claims of the present invention recite “a metal content of less than 500 ppm”. This feature is important to customers of the product claimed in the claims of the present invention, namely semiconductor device manufacturers, for the reasons stated above regarding maintenance of stable electrical properties of the resulting materials. Zhao makes no mention of any concern for metals content, and to the extent Zhao uses commercially available BASF Pluronic surfactants, the metal contents will be outside the claim limitation of “less than 500 ppm” for the materials produced with the Pluronic surfactants. This has already been established of record in this case

Application No. 10/046,434
Amendment Dated January 20, 2005
Reply to Office Action of 20 September 2004

by the prior submission of the Declaration Under 37 C.F.R. 1.132 of the inventor, James E. Mac Dougall, PhD, particularly at paragraphs 8-13 (an unofficial copy of which is attached for ease of reference by the examiner).

CONCLUSION

Applicant respectfully asserts that the claims define over the cited prior art of record of Zhao. All the claims recite a metal content of less than 500 ppm. Zhao is silent regarding metal content and the inventors have shown both in the Specification and the previously filed Declaration that using commercially available BASF Pluronic surfactants without additional purification prior to use will not result in achieving resulting materials with a metal content of less than 500 ppm.

In addition, Claims 19-24, 26, 28-33, 35 and 37 are separately patentable over the cited prior art of Zhao, because those claims recite the lack of order sufficient to generate X-ray diffraction peaks caused by ordering or crystallinity. Zhao is replete with references to order, X-ray diffraction peaks caused by order or crystallinity and references to the type of order such as "cubic" and "hexagonal" order or crystal structure.

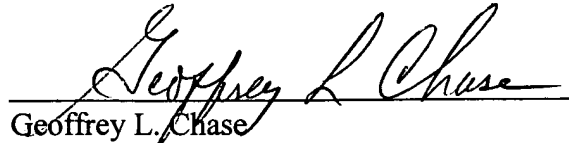
For at least the reasons set forth above, it is respectfully submitted that the above-identified application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are respectfully requested.

Should the Examiner believe that anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Application No. 10/046,434
Amendment Dated January 20, 2005
Reply to Office Action of 20 September 2004

Applicant has separately petitioned for an extension of time to make this Response timely.

Respectfully submitted,

A handwritten signature in cursive script, reading "Geoffrey L. Chase", is written over a horizontal line.

Geoffrey L. Chase
Registration No. 28,059

Air Products and Chemicals, Inc.
7201 Hamilton Blvd.
Allentown, Pennsylvania 18195-1501
(610) 481-7265

Attachment: Previously filed Declaration Under Rule 132 of J. E. Mac Dougall, PhD
Petition for Extension of Time

N:\docnos\5977PDamend-2.doc